AMENDMENTS TO THE CLAIMS, INCLUDING STATUS OF ALL CLAIMS

In the Claims:

Please replace pending Claims 1-3 with amended Claims 1-3, and add new Claims 4-19, as follows:

1. (Currently Amended) A machine for forming parts, comprising:

a mold;

means for opening and closing said mold;

an infrared sensor in view of said mold, wherein at least one of the parts formed by said machine is assessable by said infrared sensor while the at least one of the parts is in said mold, and before the at least one of the parts is removed from said mold;

means for analyzing the assessment data from said infrared sensor, said analyzing means generating an indication of the optimization of the length of time the parts have cooled, said analyzing means in communication with said means for opening and closing said mold, wherein said means for opening and closing said mold is responsive to said indication.

2. (Currently Amended) A sensory system ~~and method~~ comprising:

at least one sensor, wherein data is obtained regarding the status of a formed part positioned within a mold by said at least one sensor;

means for analyzing said data from said at least one sensor for determination of the ~~thermographic~~ status of the formed part; and

means for communicating said data analysis to direct a course of action of a process.

3. (Currently Amended) A method of inspecting the status of a molded part, comprising the steps of:

a. acquiring an infrared thermograph of the part before the part exits the mold;

b. utilizing said infrared thermograph to report the temperature of the outside of the part;

c. transferring said temperature data to an analyzer;

c. analyzing said temperature data; and

d. sending a signal to a controller, wherein said controller is responsive to said signal from said analyzer.

4. (New) The machine of Claim 1, wherein said machine is an injection molding machine, and wherein said assessment data is surface temperature of the part.

5. (New) The machine of Claim 4, wherein said assessment data is a direct measurement of temperature of an outer surface of said at least one of the parts by conversion of thermal radiation by radiometric algorithm into temperature values.

6. (New) The machine of Claim 5, wherein said means for analyzing said assessment data further comprises a diagnostic determination of a temperature of a center of said at least one of the parts.

7. (New) The machine of Claim 1, wherein said machine is selected from the group consisting of a stretch blow molding machine, an extrusion blow molding machine, a vacuum molding machine, a rotary molding machine, a die cast machine, a structural foam machine, and a rapid injection molding (RIM) machine.

8. (New) The sensory system of Claim 2, wherein said at least one sensor is a wireless thermographic sensor, and wherein said data is an infrared thermograph.

9. (New) The sensory system of Claim 2, wherein said determination of the status of the formed part further comprises determination of thermographic status and a minimal length of mold closure time for a formed part center to reach a glass transition temperature.

10. (New) The sensory system of Claim 9, wherein said means for communicating said data analysis to direct a course of action of a process further comprises a machine controller, wherein said machine controller receives said data analysis and controls open and close time of said mold for a formation of a subsequent part.

11. (New) The sensory system of Claim 2, wherein said analyzing means is integrated with said sensor.

12. (New) The sensory system of Claim 11, wherein said sensor further comprises said communicating means.

13. (New) The sensory system of Claim 2, wherein said sensor is an ultrasonic sensor, and wherein said status is density of said part.

14. (New) The method of Claim 3, wherein said infrared thermograph is acquired during a mold status selected from the group consisting of: immediately upon mold opening, prior to mold being fully open, and mold fully open.

15. (New) The method of Claim 3, wherein said temperature data is transferred to said analyzer by a method selected from the group consisting of spread-spectrum radio frequency, and infrared signal communication platform.

16. (New) The method of Claim 3, wherein said analysis of said temperature data further comprises an empirical measurement of a difference between a part surface temperature T_S and a part center temperature T_C in view of a glass transition temperature T_g in order to determine an optimum temperature T_{OPT} with an optimized cooling time t_c.

17. (New) The method of Claim 16, wherein T_{OPT} is determined according to the equation:

$$T_g - \Delta T_{(C-S)} - T_{FOS} = T_{OPT}$$

wherein T_{FOS} is a factor of safety.

18. (New) The method of Claim 17, wherein said infrared thermograph of said part provides T_S, wherein said analyzer compares T_S is compared to T_{OPT}, wherein if T_S is

less than T_{OPT}, said signal from said analyzer directs said controller to decrease the mold close phase by decreasing cooling time t_c, and wherein if T_S is greater than T_{OPT}, said signal from said analyzer directs said controller to increase the mold close phase by increasing cooling time, t_c.

19. (New) The method of Claim 3, wherein said method is repeated for every part-forming cycle.